To: Riley, Gary[riley.gary@epa.gov]; Deschambault, Lynda[Deschambault.Lynda@epa.gov]; Greg Reller[gr@burlesonconsulting.com]
Cc: Brown, Anthony R (RM)[anthony.brown@bp.com]; Cohen, Adam[Adam.Cohen@dgslaw.com]
From: Lombardi, Marc
Sent: Mon 1/9/2017 6:48:37 PM
Subject: FW: Leviathan Mine - OW - El Nino Monitoring January 7-9, 2017

Gary / Lynda,

Below is a summary of observations of precipitation at Monitor Pass, and streamflow and water quality for Leviathan Creek at Station 15, based on data available 0900 January 9, 2017.

Thanks,

Marc

Marc R. Lombardi, CEM, PG

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From: Lombardi, Marc
Sent: Monday, January 09, 2017 10:37 AM
To: Brown, Anthony R (RM) <anthony.brown@bp.com>
Cc: Cohen, Adam <Adam.Cohen@dgslaw.com>
Subject: Leviathan Mine - OW - El Nino Monitoring January 7-9, 2017

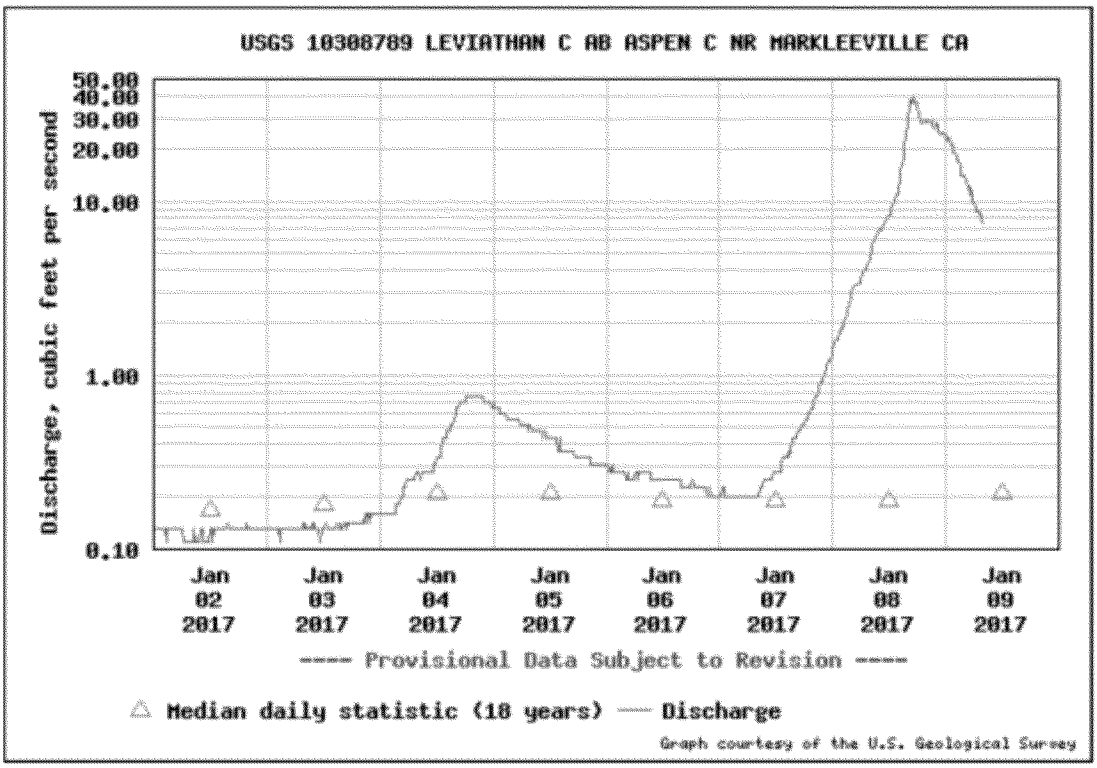
Tony,

Below is a summary of observations of precipitation at Monitor Pass, and streamflow and water quality

for Leviathan Creek at Station 15, based on data available 0900 January 9, 2017.

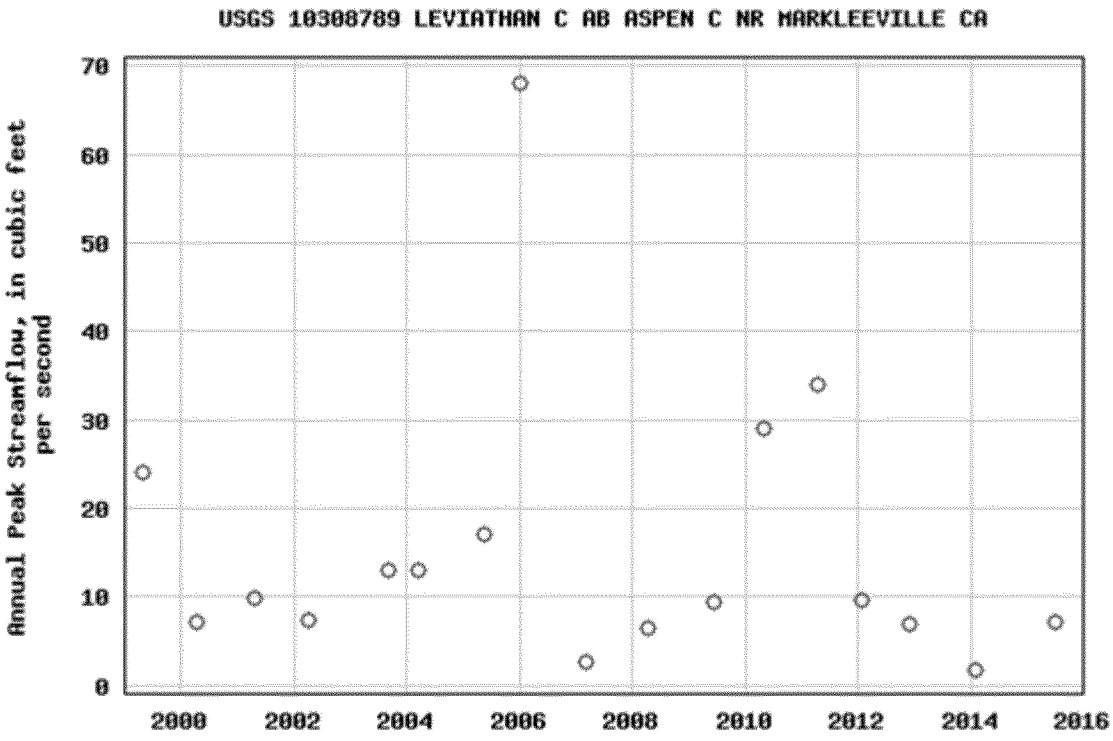
Precipitation at the Monitor Pass SNOTEL station began approximately 0700 January 7. By 0900 January 9, 2.9 inches (as liquid water) of precipitation were measured.

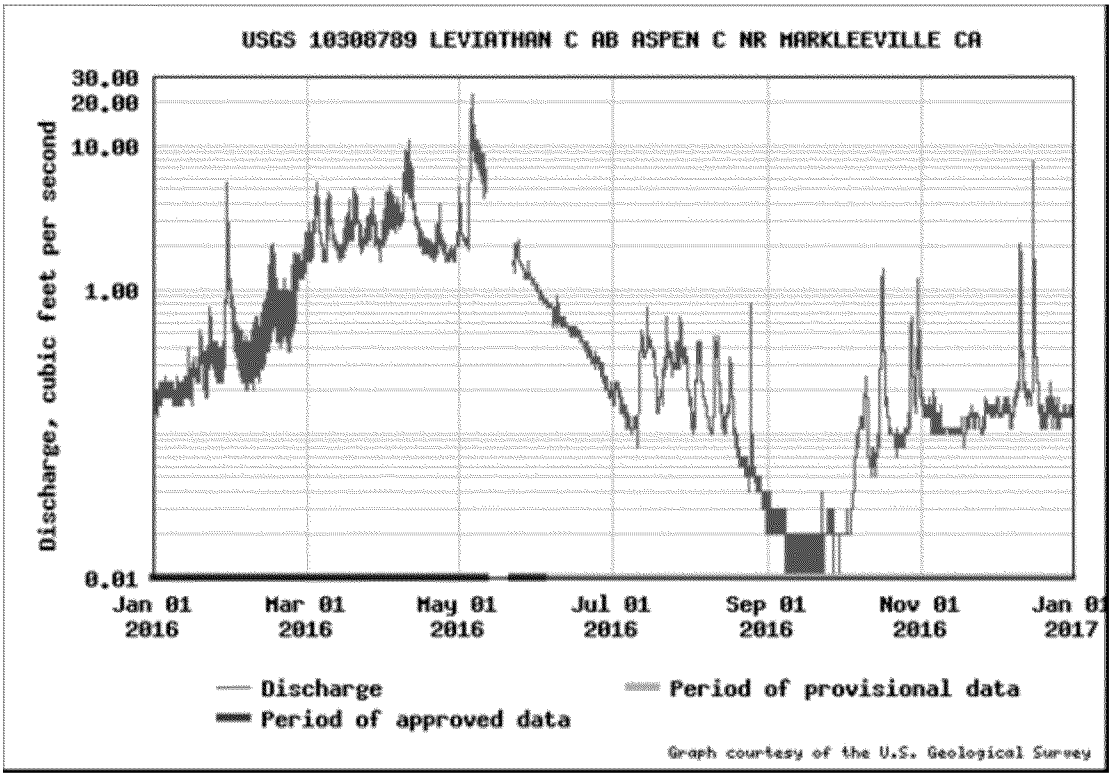
Streamflow on Leviathan Creek at Station 15 (downstream of the beaver complex but upstream of the confluence with Aspen Creek) increased from a pre-storm value of <0.2 cfs to a peak value of 40 cfs at 1900 January 8, and subsequently declined to 6.6 cfs at 0900 January 9.



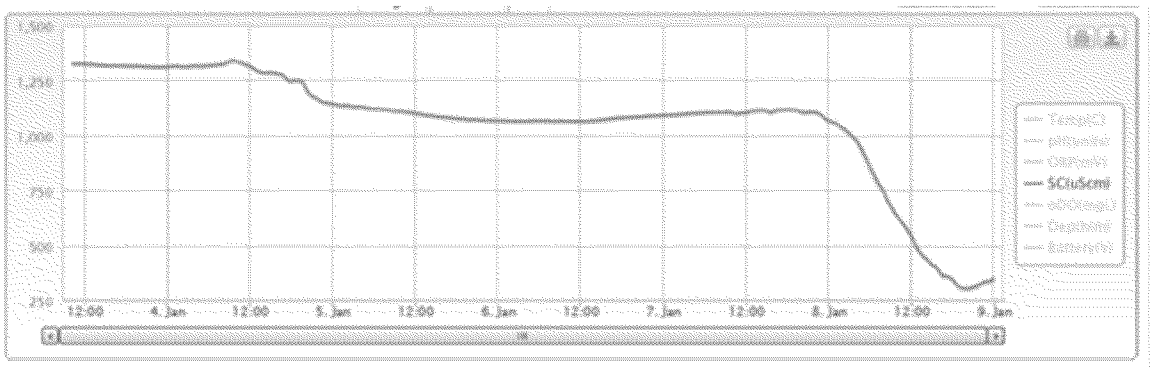
The 40 cfs peak flow is the second largest flowrate measured at this location. The largest flow, 68 cfs, was measured on December 31, 2005.

Other relatively large flowrates >20 cfs) occurred in 1999, 2010, 2011, and 2016.

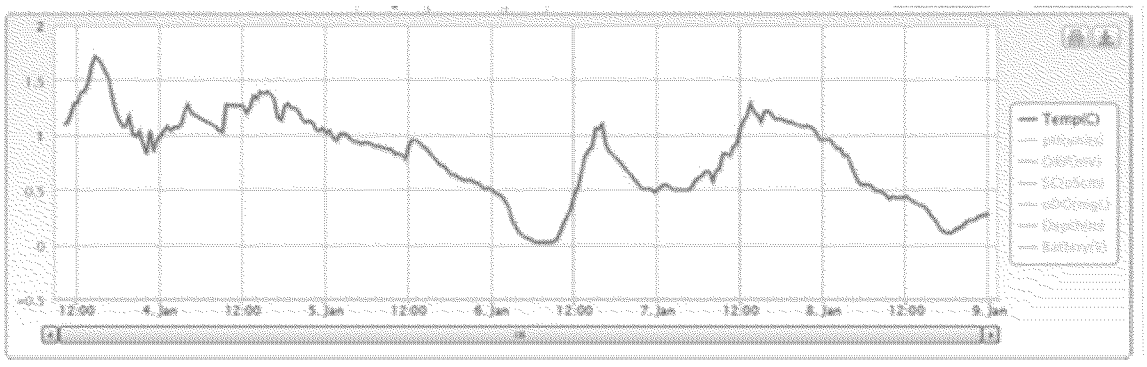

USGS 10308789 LEVIATHAN C AB ASPEN C NR MARKLEEVILLE CA
Annual Peak Streamflow, in cubic feet per second
70
60
50
40
30
20
10
0
2000
2002
2004
2006
2008
2010
2012
2014
2016


USGS 10308789 LEVIATHAN C AB ASPEN C NR MARKLEEVILLE CA
Discharge, cubic feet per second
30.00
20.00
10.00
1.00
0.01
Jan 01 2016
Mar 01 2016
May 01 2016
Jul 01 2016
Sep 01 2016
Nov 01 2016
Jan 01 2017
Discharge
Period of provisional data
Period of approved data
Graph courtesy of the U.S. Geological Survey

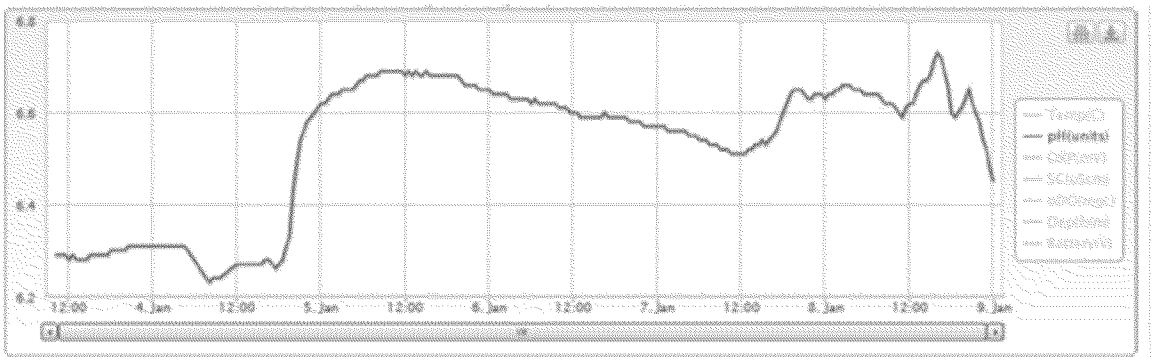
Specific conductance (SC) decreased from a pre-storm value of approximately 1100 uS/cm to a minimum of approximately 300 uS/cm at 2000 January 8, and increased slightly to approximately 350 uS/cm by 0900 January 9. This indicates that the storm runoff has lower dissolved solids, and hence lower SC, than does pre-storm baseflow. There was not a SC increase between 1600 and 1830 January 8 (see discussion of pH data below).



Water temperature declined from approximately 1 C to 0.1 C, and subsequently rebounded to approximately 0.3 C. The value of approximately 0 C during high flow is consistent with the storm runoff being composed largely of recently melted snow.



pH varied from a pre-storm value of ~6.5 to a maximum of 6.7 at 1600 January 8, followed by a drop to 6.6 at 1830, a rise to 6.65 at 2000, and a decline to approximately 6.45 by 0900 January 9. The current pH is comparable to pre-storm values. Note that the scale of the graph makes these relatively small changes – a few tenths of a pH unit – appear more dramatic than they actually are. Also note that the current pH is higher that the values of approximately 6.3 observed January 4.



Thanks,

Marc

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